

<p align="center">DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT Housing—Federal Housing Commissioner</p> <p>TO: DIRECTOR, HOUSING DIVISION DIRECTOR, MULTIFAMILY DIVISION DIRECTOR, SINGLE FAMILY DIVISION</p>	<p>STRUCTURAL ENGINEERING BULLETIN NO. 689 Rev. 7 (Supersedes issue dated October 7, 1996)</p>
	<p>ISSUE DATE: February 17, 1998</p>
	<p>REVIEW DATE: February 17, 2001</p>
<p>SUBJECT: 1. Item Description TJI® Roof and Floor Joist</p> <p>2. Name and address of Manufacturer Trus Joist MacMillan 200 East Mallard Drive Boise, ID 83707</p>	

This Structural Engineering Bulletin (SEB) should be filed with other SEBs and related Bulletins on materials or products as required by prescribed procedures.

The technical description, requirements and limitations expressed herein do not constitute an endorsement or approval by the Department of Housing and Urban Development (HUD) of the subject matter, and any statement or representation, however made, indicating approval or endorsement by HUD is unauthorized and false, and will be considered a violation of the United States Criminal Code, 18 U.S.C. 709.

NOTICE: THIS BULLETIN APPLIES TO DWELLING UNITS BUILT UNDER HUD HOUSING PROGRAMS. NON-HUD INSURED UNITS MAY OR MAY NOT BE IN CONFORMITY WITH THE REQUIREMENTS OF THE HUD MINIMUM PROPERTY STANDARDS.

Any reproduction of this Bulletin must be in its entirety and any use of all or any part of this Bulletin in sales promotion or advertising is prohibited.

1. General:

This Bulletin sets forth specific requirements under the Technical Suitability of Products Program for determining the eligibility of housing to be constructed under HUD mortgage insurance, or other HUD housing programs.

2. Scope:

This Bulletin applies only to the structural features of this method of construction. Final determination of eligibility is made by the appropriate HUD Field Office. Other factors considered by the Field Office will be valuation, location, architectural planning and appeal, mechanical equipment, thermal characteristics, and market acceptance. Consideration is also necessary to determine whether a specific property will qualify under the specific HUD program, when constructed according to the method outlined in this Bulletin, and where the structure is to be located.

In geographical areas subject to hurricanes, earthquakes, or other severe conditions affecting dwelling structures, the HUD Field Office shall require additional safeguards in proposed designs, when necessary.

3. Minimum Property Standards (MPS):

Compliance with HUD MPS will be determined by the HUD Field Office on the same basis as submissions involving conventional construction, except for the special features described in this Bulletin.

4. Inspection:

Field compliance inspections covering conventional items of construction and any special features covered in this Bulletin shall be made in accordance with prescribed procedures.

The appropriate HUD Field Office shall furnish a copy of a HUD field inspection report to Headquarters, Manufactured Housing and Standards Division, Office of Consumer and Regulatory Affairs, when there is:

- a. Evidence of noncompliance with any portion of the system of construction described in this Bulletin.
- b. Faulty shop fabrication, including significant surface defects.
- c. Damage to shop fabricated items or materials due to improper transportation, storage, handling, or assembly.
- d. Unsatisfactory field workmanship or performance of the product or system.
- e. Any significant degradation or deterioration of the product or evidence of lack of durability or performance.

Periodic plant inspections will be made by HUD Field Office or State Agency personnel in accordance with their prescribed procedures. Factory inspection reports shall be submitted to HUD Headquarters, upon request.

5. Certification:

The manufacturer named in this Bulletin shall furnish the builder with written certification stating that the product has been manufactured in compliance with the HUD Minimum Property Standards (MPS), except as modified by this Bulletin. The builder shall endorse the certification with a statement that the product has been erected in compliance with HUD MPS, except as modified by this Bulletin, and that the manufacture's certification does not relieve the builder, in any way, of responsibility under the terms of the Builder's Warranty required by the National Housing Act, or under any provisions applicable to any other housing program. This certification shall be furnished to the HUD Field Office upon completion of the property.

OUTLINE DESCRIPTION, CATEGORY II CONSTRUCTION

GENERAL:

This Bulletin provides for use of the TJI® joist, and all wood I-joist developed by the Trus Joist MacMillan for floor and roof spans up to 46 feet.

PRODUCTION DESCRIPTION:

The TJI® joist is a joist with wood flanges and webs. Various combination of flange and web materials are noted in Table No. I, Attachment "A". The top and bottom flanges are placed so as to create a constant depth joist (parallel) or a constantly varying depth joist (single taper).

The web butt joints are either square butt or serrated as required by the specific manufacturing standard of the Trus Joist MacMillan. The web flange connection is made by inserting the web into a groove in the center of the face of the flange members.

The TJI® joist is produced in a continuous fabrication process. The flange and web members are fed into a machine which assembles them into the finished product.

The TJI® joist is cut to the desired length as it leaves the assembly machine and is stacked in a controlled environment to allow the adhesive to cure.

CONNECTORS, BRIDGING, AND WEB STIFFENERS:

Connectors and accessories used with the TJI® joists shall be common lumber hardware items.

Top flanges shall be laterally supported at least every 24 inches except that 18 inches is required for joists with flange widths of 1 3/4 inches or less. The ends of the joists must be restrained to prevent rollover. This is normally provided by diaphragm sheathing attached to the top flange and to an end wall, or a shear transfer panel capable of transferring a force of 50 plf. Blocking or X-bracing with equivalent strength may be used.

Web stiffeners are required as shown in Attachment "A". All accessory items shall be installed in accordance with the requirements and recommended practices of Trus Joist MacMillan.

ENGINEERING PROPERTIES FOR DESIGN:

Engineering properties for TJI® members, including depth, weight per lineal foot, maximum resistive moment, maximum vertical shear, stiffness (EI) and reaction properties are presented in tabular forms as an integral part of this Bulletin. (See Attachment "A", Table II.)

Hole charts defining the maximum size and corresponding positions of permissible holes in web members are also included. (See Attachment "B".)

LOAD TABLES:

Specific TJI® Joist products vary regionally. The manufacturer provided regional literature with load tables based upon the design properties of Table No. II and other design criteria specified in Attachment "A".

MANUFACTURING PLANTS:

Components covered under this Bulletin will be produced in the following plants:

Lowndes County Plant
190 Industrial Blvd./Clay Road
P.O. Box 5326
Valdosta, GA 31603

New Products Plant
3210 East Amity Road
P.O. Box 9305
Boise, ID 83707

Eugene Plant
195 N. Bertelsen Road
Eugene, OR 97402

Stayton Plant
2345 W. Deschutes Drive
Stayton, OR 97383

Natchitoches Plant
Grand Ecore Road
Route 3, Box 138F
Natchitoches, LA 71457

East Kentucky Plant
610 Trus Joist Lane
Chavies, KY 41727

The Atlanta, Boise, Louisville, New Orleans and Portland HUD Offices will inspect these plants in accordance with prescribed procedures.

QUALITY CONTROL:

The appropriate HUD Field Office in whose jurisdiction the manufacturing plant is located shall review and approve plant fabrication procedures and quality control program, and shall report to Headquarters in accordance with outstanding instructions. The quality control program shall include field erection or supervision by Trus Joist MacMillan.

RECORD OF PROPERTIES:

The manufacturer shall provide a list of the first ten properties in which the component of system described in the Bulletin is used. The list shall include the complete address, or description of location, and approximate date of installation or erection. Failure of the manufacturer to provide HUD with the above information may result in cancellation of this Bulletin.

NOTICE OF CHANGES:

The manufacturer shall inform HUD in advance of changes in production facilities, transportation, field erection procedures, design, or of materials used in this product. Further, the manufacturer must inform HUD of any revision to corporate structure, change of address or change in name or affiliation of the prime manufacturer. Failure of the manufacturer to notify HUD of any of the above changes may result in cancellation of this Bulletin.

EVALUATION:

This SEB shall be valid for a period of three years from the date of initial issuance or most recent renewal or revision, whichever is later. The holder of this SEB shall apply for a renewal or revision 90 days prior to the Review Date printed on this SEB. Submittals for renewal or revision shall be sent to HUD Headquarters. Appropriate User Fee shall be sent to:

U.S. Department of Housing and Urban Development
Technical Suitability of Products Fees
P.O. Box 954199
St. Louis, MO 63195-4199

The holder of this SEB may apply for revision at any time prior to the Review Date. Minor revisions may be in the form of a supplement.

If the Department determines that a proposed renewal or supplement constitutes a revision, the appropriate User Fee for a revision will need to be submitted in accordance with Code of Federal Regulations 24 CFR 200.934, "User Fee System for the Technical Suitability of Products Program", and current User Fee Schedule.

CANCELLATION:

Failure to apply for a renewal or revision shall constitute a basis for cancellation of the SEB. HUD will notify the manufacturer that the SEB may be canceled when:

1. conditions under which the document was issued have changed so as to affect production of, or to compromise the integrity of the accepted material, product, or system,
2. the manufacturer has changed its organizational form without notifying HUD, or
3. the manufacturer has not complied with responsibilities it assumed as a condition of HUD's acceptance.

However, before cancellation, HUD will give the manufacturer a written notice of the specific reasons for cancellation, and the opportunity to present views on why the SEB should not be canceled. No refund of fees will be made on a canceled document.

This Structural Engineering Bulletin is issued solely for the captioned firm, and is not transferable to any person or successor entity.
